

AMENDMENTS TO THE CLAIMS

The following listing of claims, in which text to be added is underlined and text to be deleted is surrounded by brackets, will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (cancelled)

2-12. (withdrawn)

13. (currently amended) A radially expandable artificial valve prosthesis for deployment in a bodily passage having a longitudinal axis, said prosthesis comprising:

a valve structure, including a plurality of leaflets adapted to restrict fluid flow therethrough;

a support structure attached to the valve structure;

wherein each leaflet of the plurality of leaflets has a length and a distal end and is oriented closely with the longitudinal axis of the bodily passage throughout the majority of the length of the leaflet and with the distal [portion] end extending circumferentially and distally to form a seal with at least one of the walls of the bodily passage and the support structure; and

wherein each of the plurality of leaflets is configured to cooperatively define with a portion of the bodily passage a pocket [the configuration of the leaflets creates pockets between the leaflets and the walls of the bodily passage] of sufficient size and shape to facilitate the creation of retrograde flow patterns capable of reducing stagnation of fluid therein.

14-15. (withdrawn)

16. (cancelled)

17. (currently amended) A radially expandable artificial valve prosthesis for deployment in a bodily passage, said prosthesis having a longitudinal axis and comprising:

a valve structure comprising one or more leaflets adapted to restrict fluid flow therethrough, each of the one or more [the] leaflets includes an inner edge;

a support structure configured to carry the valve structure;

wherein the support structure includes one or more longitudinal attachment struts along which [the] at least a portion of each of the one or more leaflets [are] is attached, the one or more longitudinal attachment struts oriented substantially longitudinally with respect to the longitudinal axis of said prosthesis [device] such that the one or more leaflets [leaflet] are coaptalbe with one another over a substantial portion of their length when said prosthesis [the device] is implanted within the body [body] passage; and

wherein the one or more longitudinal attachment struts [the support structure] comprises [a] first and [a] second substantially parallel longitudinal attachment struts and wherein the one or more leaflets comprises a pair of opposing leaflets, each of the pair of opposing leaflets attached along one of the first and second substantially parallel longitudinal attachment struts [attached therealong].

18-20. (withdrawn)

21. (currently amended) The radially expandable artificial valve prosthesis of claim 17 [16], wherein the first and second substantially parallel [two] longitudinal attachment struts are connected to each other at [extend generally parallel to one another from each of the] a commissural [points] point.

22. (currently amended) A radially expandable artificial valve prosthesis for implantation in a vessel comprising:

a support structure having a longitudinal axis, a first end that includes at least a first and a second commissure, and a second end located distal thereto, the at least a first and a second commissure disposed substantially opposite each other with respect to the longitudinal axis;

a plurality of leaflets, each leaflet of the plurality of leaflets having an outer edge that includes a first lateral edge extending distally from the first commissure and a second lateral edge extending distally from the second commissure, the first and second lateral edges generally converging about the second end of the support structure such that the plurality of leaflets collectively form a seal with the walls of the vessel and cooperate with one another to restrict fluid flow therethrough; and

wherein the first and second lateral edges are each attached to the support structure along an attachment pathway that includes a first, proximal portion comprising a substantial portion of the length of the prosthesis having primarily a longitudinal orientation with respect to the longitudinal axis of the prosthesis, and a second, distal portion angling obliquely from the first, proximal portion such that plurality of leaflets each comprise an extensive coaptile portion that defines the side of a large pocket located adjacent to each leaflet, and a basal portion that defines the bottom of the pocket when the prosthesis is implanted within the vessel.

23. (currently amended) A radially expandable artificial valve prosthesis for implantation in a vessel comprising:

a support structure having a longitudinal axis, a first end that includes a first and a second commissure, and a second end located distal thereto,

the at least a first and a second commissure disposed substantially opposite each other with respect to the longitudinal axis;

a pair of leaflets, each having an outer edge that includes a first lateral edge extending distally from the first commissure and a second lateral edge [portion] extending distally from the second commissure, the first and second lateral edges generally converging about the second end of the support structure such that the pair [plurality] of leaflets collectively form a seal with the walls of the vessel and cooperate with one another to restrict fluid flow therethrough; and

wherein the first and second lateral edges are each attached about a first strut that extends from the first and second commissure structure along an attachment pathway that includes a first, proximal portion comprising a substantial portion of the length of the prosthesis having primarily a longitudinal orientation with respect to the longitudinal axis of the prosthesis, and a second, distal portion angling obliquely from the first portion such that plurality of leaflets each comprise an extensive coaptation portion that defines the side of a large pocket located adjacent to each leaflet, and a basal portion that defines the bottom of the pocket when the prosthesis is implanted within the vessel.

24. (currently amended) A radially expandable artificial valve prosthesis for deployment in a bodily passage, comprising:

a valve structure, including a plurality of leaflets adapted to restrict fluid flow therethrough, each of the plurality of leaflets comprising a free inner edge and an outer edge that includes a first and second lateral outer edge which interconnect distally to form a bottom edge;

a support structure comprising a series of proximal bends comprising substantially opposing commissural points for the attachment of the plurality of leaflets; and longitudinal attachment struts extending distally therefrom, the support structure further comprising a pair of distal attachment struts extending distally and circumferentially from the longitudinal attachment struts; and

wherein the lateral outer edges are attached proximally along the longitudinal attachment struts to form a extensive leaflet contact area, and distally long the distal attachment struts which converge laterally and carry

the bottom edge of each of the plurality of leaflets such that the prosthesis is adapted for forming a seal between the plurality of leaflets and the walls of the bodily passage and creating a large pocket at the base of each of the plurality of leaflets that is of sufficient size and shape such that fluid flowing in the retrograde direction is capable of achieving flow patterns that reduce stagnation of fluid therein.

25. (previously presented) The radially expandable artificial valve prosthesis of claim 24, wherein the longitudinal attachment struts are sized to create a leaflet contact area that comprises 10-80% of the length of the valve structure.

26. (previously presented) The radially expandable artificial valve prosthesis of claim 24, wherein the longitudinal attachment struts are sized to create a leaflet contact area that comprises 30-60% of the length of the valve structure.

27. (previously presented) The radially expandable artificial valve prosthesis of claim 24, wherein the longitudinal attachment struts are sized to create a leaflet contact area that comprises 35-55% of the length of the valve structure.

28. (cancelled)

29. (cancelled)